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U. S. DEPARTMENT OF AGRICULTURE

Financing

no. 7

Farm Adjustments in the Southern Piedmont



U.S. Farm Credit Administration (The Farm Credit Administration)
Washington, D.C.
In cooperation with

Purdue University Agricultural Experiment Station,
College Experiment Station, University of Georgia,
and the Farm Credit District of Columbia

August 1957

Location of Southern Piedmont Area and PCA Territories Included in Study

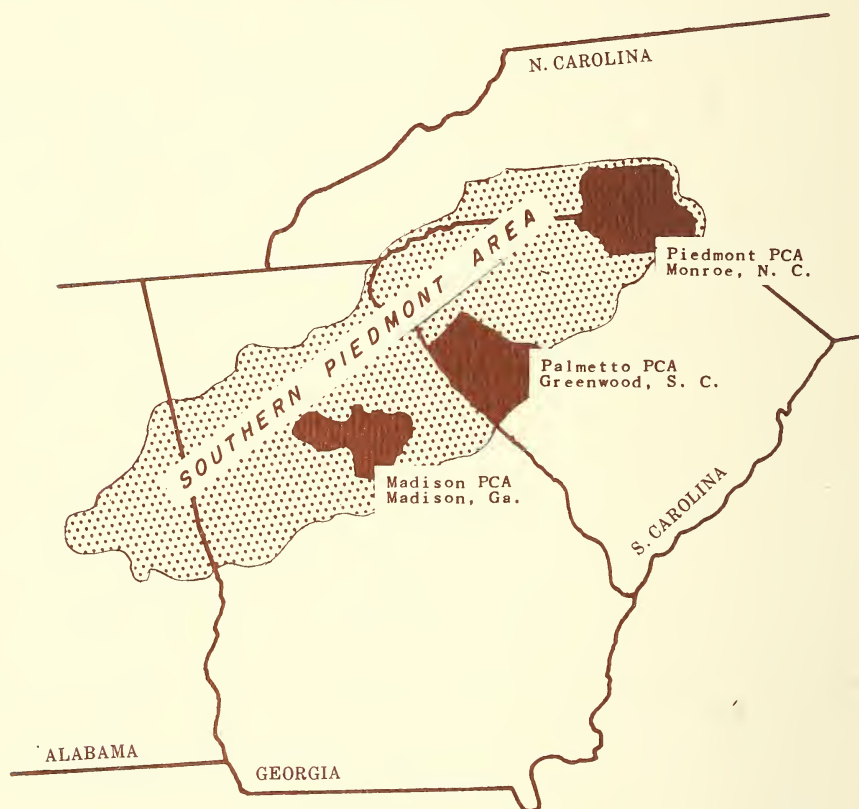


Figure 1

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FOREWORD

ONE important means by which farmers can increase their earnings and improve farm family living is through the use of credit. The Cooperative Farm Credit System is particularly interested in furnishing farmers the types of farm credit which will enable them to improve their farm incomes. For this reason, the Farm Credit Administration sponsored this study of the activities of production credit associations in financing farmers in the Southern Piedmont. It shows how such financing has enabled farmers to obtain the larger amounts of livestock and equipment needed to shift to livestock farming and to make related adjustments in their farm businesses.

This study has been conducted under a cooperative agreement with the Purdue University and University of Georgia College of Agriculture Experiment Stations. The Farm Credit District of Columbia, S. C., also assisted. Under this agreement, Julian H. Atkinson, a graduate of the University of Georgia and a graduate student at Purdue University, was employed by the Farm Credit Administration from July 1, 1952, to June 30, 1953. The field studies were made during this period. He made the subsequent analysis principally at Lafayette, Ind., and in the summer of 1954 presented a detailed report to Purdue University in partial fulfillment of the requirements for a Doctor of Philosophy degree. In this study the views expressed are his own and are not necessarily those of the Farm Credit System or the cooperating experiment stations. He is now assistant professor at Purdue University with major responsibilities in the field of agricultural finance.

SUMMARY

IS it profitable for a farmer to use credit to finance farm adjustments? An analysis of the records of 200 farm owners in the Southern Piedmont area who had loans from production credit associations continuously from 1946 to 1951 showed:

1. A farmer's problem is how to make the most effective use of all his resources. By using credit, he can often make important adjustments in his farm operations which, once established, will increase farm income and thus provide a better family living.

2. Cotton farmers who changed their type of farming to livestock or to include livestock with cotton made greater financial progress. From 1946 to 1952, their net worth increased \$3,100 to \$8,500 more than if they had continued to grow only cotton.

3. Farmers changing to more livestock increased their sales of farm products from \$1,300 to \$4,300 more per year than if they had continued growing only cotton.

4. Farmers who changed to livestock or a cotton and livestock combination used more credit than cotton farmers. The average cotton farmer in this area in 1951 was using about \$1,800 in credit. Farmers recently changing to livestock or adding livestock to their cotton farms used more than twice this amount of credit. Farmers who had been on livestock or a combination of cotton and livestock farms for a number of years were using three to five times more credit than cotton farmers. They also used more credit in relation to the value of their assets.

5. Farmers found the annual renewable term arrangement of their loans from production credit associations adaptable to financing farm adjustments. Advances and repayments are flexible and larger loans, based on available collateral, can be made than with loans written for longer terms. Most farmers, however, used various combinations of loans from production credit associations and farm mortgage real estate credit.

6. Livestock farmers or farmers with a livestock and cotton combination used a larger part of their loans from production credit associations for capital investment purposes than did cotton farmers. As a result, they renewed about one-fourth to one-half of the amount of their previous year's loans.

7. A decreasing proportion of total assets of farmers with livestock enterprises was accounted for by real estate in the years, 1946-52. Livestock accounted for as much as 31 percent of their total assets by 1952.

A 10-year budget analysis of one Southern Piedmont farm showed the practicability of establishing a Grade A dairy herd on this farm with borrowed funds. Under stable prices for farm products, the analysis indicated the loan could be repaid from farm earnings in about 7 years and under less favorable prices the loan could be repaid in about 9 years.

Despite the fact that this study shows that many farmers have profited by turning to livestock production, raising livestock is not a "cure-all" for low income. Management may be a limiting factor in some cases. Some cotton farmers may find they can use their resources to better advantage by increasing their efficiency in cotton production rather than by turning to livestock production. Each farmer must decide what combination of resources will be best for his individual circumstances.

Most farmers, who decide to make adjustments in their businesses, find it better to grow into a new farm enterprise and to develop management skills before undertaking a larger enterprise. If mistakes are made, losses will tend to be smaller.

Financing Farm Adjustments

in the

Southern Piedmont

by Julian H. Atkinson

BETTER farm family living generally depends on larger farm incomes. Farm incomes, in turn, are governed mainly by the amounts of capital (land, livestock, machinery and other assets), labor, management and other resources employed by farmers, the proportions in which they are used, and the types of production to which they are applied. The amounts of capital used are particularly important in influencing farm earnings.

These relationships are being given increasing attention in the Southeast where farm incomes have averaged lower than in most other farming regions of the United States. Much of this attention has been focused on the comparatively small amounts of capital used per farm worker. This has arisen in part from the fact that cotton production in this area usually has required relatively large amounts of labor and smaller amounts of capital than other types of farming in other areas. Because of the nature of cash crop farming, moreover, it has been difficult for farmers to accumulate capital. For these and other reasons, in the South-

east farm productivity per man hour has been only about 60 percent of the national average.¹

One of the most important ways by which individual farmers can increase the amounts of capital used or make other profitable changes in their businesses is by the proper use of credit. Frequently, however, lack of knowledge on the part of both farmers and lenders regarding probable earnings from increasing the size of the farm, by adding livestock, by using more mechanical equipment and power, or by changing the type of farming, may keep farmers from using credit and thus delay their accumulation of capital and increased earnings.

This study deals with these problems as they apply to the Southern Piedmont area which runs through the Carolinas, Georgia, and into Alabama (figure 1). It is an examination of ways in which farmers in this area have increased and can increase earnings by making changes in their farming operations and particularly how credit may be utilized in effecting such changes.

¹Production Economics Research Branch, Agricultural Research Service, U. S. Department of Agriculture.

Note: The author appreciates the contributions of R. C. Engberg, Director, Research and Information Division, Farm Credit Administration; H. G. Diesslin, formerly Associate Professor of Agricultural Economics, Purdue University; R. E. Proctor, Professor of Agricultural Economics, University of Georgia; and R. A. Darr, President of the Production Credit Corporation and Federal Intermediate Credit Bank of Columbia, Columbia, S.C.; in making the study and in preparing this publication.



Farmers who shift to livestock often borrow to improve pastures and build fences.

Plan of Study

THE development of livestock production is one type of adjustment, designed to improve farm income, which has received much attention in the Southern Piedmont. Farmers, lenders, and other agricultural workers ask questions such as these:

1. Compared with cotton farming, how much more investment is required for livestock farming?

2. Can farmers who change from cotton farming to livestock production or those who add a livestock enterprise expect increases in net worth and farm sales?

3. In what form, such as real estate or machinery, are assets on various types of farms?

4. How can credit be used to facilitate shifts to livestock farming?

To examine these and other questions, information concerning 200 owner-operated Southern Piedmont farms was obtained from records of three production credit associations. These 200 farmers were all the members who had loans continuously from

these associations from 1946 through 1951.

Farmers were first divided into two groups: (1) those who did not change their type of farming over the 6-year period, and (2) those who changed their type of farming. These two groups were further divided into types of farms, based primarily upon source of income. Farms of miscellaneous types were omitted. Records of 161 farmers were studied to find answers to questions about making shifts from cotton to livestock. The following gives the number of farmers in each group:

	Number of farmers
Farmers who did not change type:	
Cotton	82
Combination (cotton-livestock)	16
Livestock	17
Farmers who changed to:	
Combination (cotton-livestock)	28
Livestock	18
Total	161

Farmers were classified as follows:

Cotton -- Farmers having 70

percent or more of annual cash receipts from cotton, with less than 20 percent from any other one enterprise, and less than 20 percent of total assets in productive livestock.

Combination (cotton-livestock)-- Farmers having 80 percent or more of annual cash receipts from cotton and livestock combined, with at least 20 percent of total receipts from cotton and at least 20 percent of total receipts from livestock or more than 20 percent of assets in productive livestock.

Livestock -- Farmers having 70 percent or more of annual cash

receipts from livestock and less than 20 percent from any other one enterprise.

Miscellaneous -- Farmers not meeting any of the above specifications.

In addition to using loan records to study the operations of the groups of farmers, the operations of one farmer who was changing to the production of Grade A milk were studied in detail. Annual budgets were prepared for this farm in order to determine credit needs and the practicability of making the proposed adjustments. The detailed study of this farm begins on page 17.

Characteristics of Cotton and Livestock Farms

THE experience of the groups of member-borrowers from production credit associations, all of whom owned the farms they operated, studied in the Southern Piedmont for the 6-year period,

The Amount a Farmer Has to Invest Depends on the Type and Size of Farm

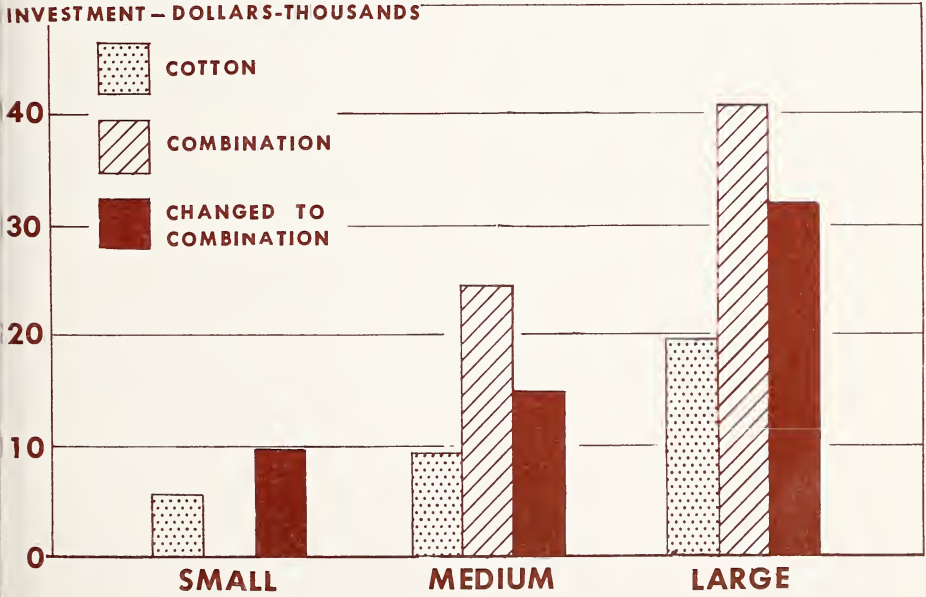


Figure 2

1946-51, reveals significant characteristics of the differences between types of farms. These are important to both farmers and lenders in considering shifts from cotton to livestock farming. They include the investment required, the sales of farm products, net worth accumulated, and changes in assets.

Investment Required

Farmers who have important livestock enterprises have a larger amount invested in their farms than do cotton farmers. Farmers who have been producing substantial amounts of livestock for several years may have two or three times more money invested than cotton farmers. The investment of farmers who have recently changed to livestock production may be from 50 to 100 percent more than that of cotton farmers. However, the average investment of farmers who had been producing livestock for several years was about twice as large as that of cotton farmers on similar acreages (figure 2 and table 1). Farmers who had recently changed to livestock or a combination of cotton and livestock averaged roughly 50 percent

higher investments than cotton farmers.

Several factors account for differences in the investment required. First, as already mentioned, cotton production requires relatively large amounts of labor. Second, it takes longer to produce livestock than to grow cotton. A crop of cotton is grown in less than 12 months, while to raise a milk cow or a beef animal takes several years. Thus, capital is "tied up" for a longer time in livestock enterprises. Third, livestock production requires an investment in many items which are "stored in larger bundles" than those on cotton farms. For example, a dairy barn may last 20 years but it must be built and owned by the farmer. A dairy enterprise -- pastures, dairy equipment, and cows -- once established can be used over a period of years. However, in cotton production, most of the expense for such items as seed, fertilizer, or day labor, are incurred annually.

Sales of Farm Products

Type of farm and continuity of type of farming also affect total sales of farm products. While

Table 1. - Average Investment Per Farmer by Type and Size of Farm, 1952

Type of farm	Size of farm		
	Small	Medium	Large
	Investment per farmer		
Farmers who did not change type:			
Cotton-----	\$5,640	\$9,350	\$19,400
Combination and livestock-----	(1)	24,380	40,850
Farmers who changed type to:			
Combination and livestock-----	9,700	14,837	32,029

¹Less than five farmers.

Table 2. - Increase in Sales of Farm Products by Type of Farm, 1946 to 1951

Type of farm	Sales of farm products		Increase in sales, 1946 to 1951	
	1946	1951	Percent	Amount
No change in type:				
Cotton-----	\$3,025	\$3,516	16	\$491
Combination-----	6,356	7,744	22	1,388
Livestock-----	9,723	11,688	20	1,965
Changed type to:				
Combination-----	4,927	7,575	54	2,648
Livestock-----	3,129	6,372	104	3,243

combination and livestock farmers had larger investments than cotton farmers, these were accompanied by greater sales volume. Farmers, who had not changed their type of farming during the period 1946-51, averaged \$7,744 in sales of farm products on combination type farms and \$11,688 on livestock farms in 1951. However, cotton farmers who had made no change in their type of farming averaged only \$3,516 in sales of farm products. On the other hand, those who had changed from cotton to a combination of cotton and livestock averaged more than twice this amount, or \$7,575 (table 2).

On farms which had similar amounts of sales in 1946, it was estimated that farmers who changed their type to more live-

stock production had sales of farm products of \$1,300 to \$4,300 more in 1951 than if they had continued in cotton farming throughout the period. Farmers who changed to combination or livestock production experienced greater dollar and percentage increases in sales from 1946 to 1951 than farmers not changing (table 2).

Percentage increase of sales from farms that started as combination or livestock farms and remained so throughout the period was similar to the percentage increase of cotton farmers. However, the dollar increase of cotton farmers was much less because these farmers had lower sales in 1946 than the other farmers. Table 2 shows that where there

Table 3. - Increase from 1946 to 1951 in Sales of Farm Products by Type of Farm and by Size of Sales in 1946

Type of farm	Sales in 1946					
	Low		Medium		High	
	<u>Increase in sales from 1946 to 1951</u>					
	Amount	Percent	Amount	Percent	Amount	Percent
No change in type:						
Cotton-----	\$323	30	\$445	20	\$700	8
Livestock-combination----	460	38	750	28	2,182	18
Changed type to:						
Livestock-combination----	1,757	183	2,600	108	4,958	57

was no change in type, increases ranged from 16 to 22 percent. Where farmers changed to a combination of cotton and livestock or to livestock farming, the increases in sales were 54 and 104 percent, respectively. As shown in table 3, percentage increases in sales of farm products were greatest for farmers with relatively small sales at the beginning of the period. The dollar amount of increase, however, was greatest for farmers with sales already at a high level in 1946.

The increased sales due to a shift in the type of farming can be shown by considering what the sales might have been if no change had been made. An estimate of such sales was obtained by increasing the 1946 sales by the same percentage increase as occurred on cotton farms. These estimated sales of farm products were then subtracted from actual 1951 sales to arrive at an esti-

mate of increase in sales due to changing type of farming as follows:

Sales in 1946	Sales of farm products		Estimated increase due to change in type
	Estimated 1946	Actual 1951	
Small	\$1, 105	\$2, 407	\$1, 302
Medium	2, 880	5, 000	2, 120
Large	9, 327	13, 594	4, 267

Cotton accounted for about 91 to 95 percent of sales of cotton farmers in the years 1946 to 1951. Livestock accounted for 96 to 98 percent of total sales of livestock farmers who did not change their type of farming. On combination farms, where farmers did not change type, cotton accounted for 48 to 59 percent of sales while livestock made up 40 to 51 percent of total sales. Farmers who changed to livestock were mostly combination farmers in 1946, selling slightly more livestock, 48 percent, than cotton,



Cotton farmers usually borrow when they add livestock or change to livestock farming.

The Net Worth of Combination or Livestock Farmers Increased Faster than that of Cotton Farmers

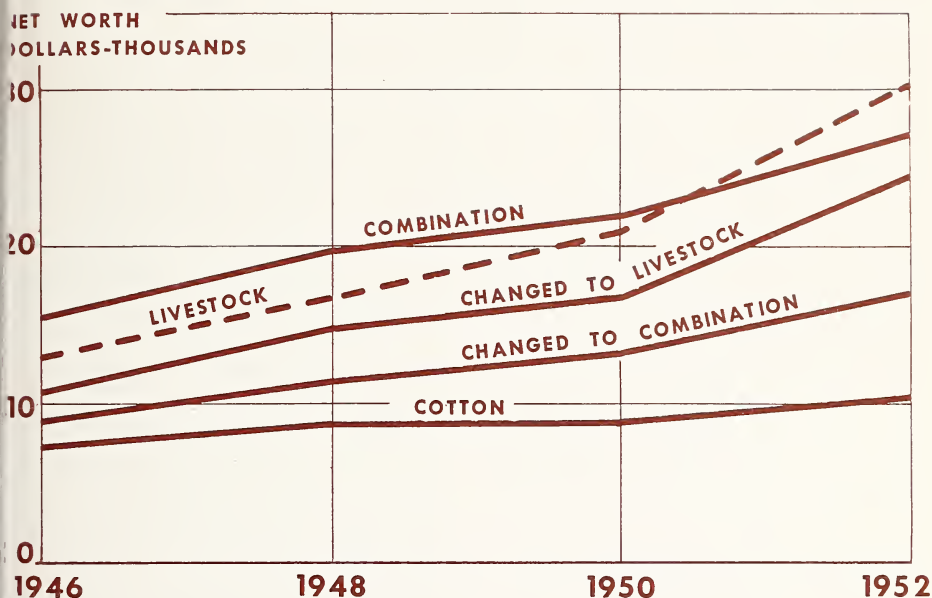


Figure 3

44 percent. Most of the farmers who changed to combination farms were cotton farmers in 1946 with 87 percent of their sales from cotton. By 1951, on combination farms, cotton accounted for 56 percent of the sales and 42 percent was from livestock. Farmers who changed to livestock farming had 80 percent of their 1951 sales from livestock.

The fact that farmers, changing to combination type farming, sold as much cotton in 1951, \$4,261, as in 1946, \$4,273, indicated that these farmers did not replace the cotton enterprise with a livestock enterprise. Rather, they added a livestock enterprise to their existing cotton enterprise. Neither did those farmers who had combination farms throughout the period reduce the size of their cotton enterprise, since they

actually sold more cotton in 1951 than in 1946.

These observations lead to the conclusion that there may be many farmers in the Southern Piedmont who can change to livestock production without materially reducing the amount of their income from cotton. On the other hand, the experience of livestock farmers indicates the possibility of changing to a type of farming where the major part of farm income is received from livestock.

Whether or not a farmer changes his type of farming so that the livestock enterprise contributes about half of his farm income or as much as 90 percent of his income depends largely upon the individual farm situation. However, the addition of livestock without materially reducing the size of the cotton enterprise may

Table 4. - *Increases in Net Worth by Type of Farm from 1946 to 1952*

Type of farm	Amount	Percent
No change in type:		
Cotton-----	\$3,095	43
Combination-----	10,607	68
Livestock-----	27,023	230
Change in type to:		
Combination-----	7,900	88
Livestock-----	11,723	110

have two distinct advantages: (1) resources which could not be used for cotton production (idle land, buildings, and labor) can be used profitably, and (2) a farmer has the opportunity of growing into the livestock business and learning skills and management practices with which he might not have been familiar.

Progress in Accumulating Net Worth

In addition to having larger sales volumes, the net worth of farmers with livestock enterprises increased faster than the net worth of cotton farmers. Such gains represent an advantage in making financial progress. Cotton farmers had not only the smallest dollar increase in net worth from 1946 to 1952 but also increased their net worth by a smaller percentage than other groups of farmers. Farmers who had livestock enterprises for the entire period increased their net worth by both a greater amount and a larger percentage than the other two groups of farmers. Farmers who started the period with combination farms and did not change had a greater increase in the amount of net worth but a slightly smaller percentage increase than those farmers who changed to a combination type during the period.

Combination or livestock farmers, or farmers who had changed to combination or livestock types, had substantially greater increases both percentagewise and in dollars in net worth (figure 3, table 4).

When farmers were divided into three groups with similar assets in 1946, cotton farmers still showed a smaller dollar and percentage increase in net worth (table 5).

Farmers who changed their type of farming to include the production of more livestock made greater financial progress than farmers who continued to specialize in cotton. Comparing cotton farmers and those farmers who changed to livestock production, both groups of farmers having similar assets in 1946, it was estimated that net worth by 1952 increased from \$3,100, 34 percent, to \$8,500, 44 percent, due to the change.

Value of assets in 1946	Estimated increase in net worth (1946-52) due to change in type	
	Amount	Percent
Under \$4,900	\$4,198	92
\$4,901-\$9,900	3,137	34
Over \$9,900	8,487	44

In making these estimates for farmers who changed to combination and livestock farming, the net worth in 1946 was increased by the same percentage increase as

that observed on cotton farms. The result was the estimated net worth assuming farmers had not changed their type of farming. The estimated net worth was then subtracted from the actual net worth for farmers who changed their type of farming to give the estimated increase in net worth due to the change in type of farming.

Based on net worth and sales, farmers with livestock enterprises had considerably higher earning capacity than cotton farmers. Progress in net worth accumulation furthermore improves the basis for credit. But not all cotton farmers can change to combination or livestock farming. Production of livestock requires different skills, management ability, and a larger initial investment than growing cotton. Those cotton farmers who have the necessary factors for producing livestock will probably increase their earnings by changing their type of farming.

Changes in Assets

The Balance Sheet of Agriculture for the United States compiled by the U. S. Department of Agriculture indicates a general trend

toward a smaller percentage of farmers' total assets accounted for by real estate. Livestock and machinery are a higher percentage of farmers' total assets. This trend was even more pronounced on the farms in this study.

The tendency toward a smaller percentage of assets in real estate was particularly apparent when the records were sorted by farming type (table 6). Cotton farmers showed a decrease of 5 percent from 1946 to 1952 in the percentage of total assets accounted for by real estate. Machinery, on the other hand, constituted 7 percent more of total assets in 1952 than in 1946. Combination and livestock farmers showed a decrease in real estate values relative to total asset value while livestock tended to comprise a greater proportion of assets. This decline of relative real estate values on farms with livestock enterprises was greater than the decline on cotton farms and is even more significant when account is taken of the fact that on the livestock farms, real estate values in 1946 were lower relative to total assets than on cotton farms. It must be recognized, however, that this trend may be magnified

Table 5. - *Increase in Net Worth by Type of Farm and by Value of Assets in 1946, from 1946 to 1952*

Type of farm	Value of assets in 1946					
	Under \$4,900		\$4,901-\$9,900		Over \$9,900	
	<u>Increase in net worth from 1946 to 1952</u>					
	Amount	Percent	Amount	Percent	Amount	Percent
No change in type:						
Cotton-----	\$1,615	54	\$3,249	49	\$5,315	36
Combination and livestock-	(1)	-	10,322	146	15,804	90
Changed type to:						
Combination and livestock-	5,800	195	6,135	100	13,568	96

¹Less than five farms.

Table 6. - *Change in Percentage of Total Assets Accounted for by Various Groups of Assets, by Stability of Type of Farm, 1946-52*

Assets	Type of farm				
	No change in type			Changed type to	
	Cotton	Combination	Livestock	Combination	Livestock
<i>Percentage change</i>					
Real estate---	-5	-8	-5	-8	-11
Machinery----	+7	+4	-3	+2	+2
Livestock----	0	+4	+9	+9	+5
Liquid-----	-1	-3	-5	-2	-2
Other-----	-1	+3	+4	-1	+6

by the tendency of production credit associations to encourage borrowers to hold real estate values fairly constant over periods of several years.

The difference in asset structure was observed by studying only 1 year, 1952 (table 7). Cotton production appears to require a larger percentage of assets in real estate than farms having livestock enterprises. Machinery made up a similar proportion of assets on all groups of farms. Livestock comprised **only** about 10 percent of total assets on cotton farms and as much as 31 percent on farms with livestock enterprises.

The types of assets are significant because they affect the relative amounts of various kinds of credit which farmers need. Farmers changing to greater livestock production usually need less farm mortgage -- real estate -- financing. Farmers need more of their credit, especially for intermediate terms, to finance the greater amounts of non-real estate capital. As a result, in combination and livestock farming chattels become increasingly important as collateral.

A further aspect of this change in the type of assets is the increase in the rate of turnover of assets. Real estate is a relatively

Table 7. - *Percent of Total Assets Accounted for by Groups of Assets, by Stability of Type of Farm, 1952*

Item	Type of farm				
	No change in type			Changed type to	
	Cotton	Combination	Livestock	Combination	Livestock
<i>Percent of total assets</i>					
Assets					
Real estate-	57	50	43	53	46
Machinery---	19	16	15	18	15
Livestock---	10	22	31	21	22
Liquid-----	10	5	7	7	8
Other-----	4	7	4	1	9
Liabilities---	8	13	21	17	9

fixed asset which, although subject to windfall gains as in the last 20 years, is also vulnerable to windfall losses in the event of long downswings in prices. Non-

real estate assets have a faster rate of turnover and, therefore, can be adjusted more readily to the longer price trends. This tends to add stability to farm earnings.

Credit Experience of PCA Members

INCREASED farm investment may result (1) from accumulations from farm earnings or from other income and (2) by using credit to purchase items needed for farm operations. The experience on the farms studied indicates that farmers used both of these methods to enlarge their investment. The 200 Southern Piedmont farmers' experience in using credit brings out more fully the role of credit in effecting changes in farming and improving farm income.

Amount of Credit Used

One of the most marked features on the farms studied is the variation in the amount of credit that farmers used. These differences are shown in table 8.

From 1946 to 1951 cotton farmers, on the average, increased their use of credit by 19 percent. On the other hand, those farmers who changed to livestock production over this period used 82 percent more credit. Farmers who were on combination or

Table 8. - *Maximum Balance of Loans from Production Credit Associations and Total Credit Used by Type of Farm, 1946-51*

Type of farm	1946	1947	1948	1949	1950	1951	Percent- age change from 1946 to 1951
<i>PCA maximum balance</i>							
No change in type:							
Cotton-----	\$781	\$1,001	\$1,109	\$1,155	\$1,122	\$1,275	63
Combination-----	1,907	2,880	3,040	3,000	3,573	4,700	146
Livestock-----	2,880	2,119	3,388	4,269	5,275	6,725	134
Changed type to:							
Combination-----	1,141	1,426	2,111	2,426	3,000	3,715	226
Livestock-----	931	1,183	2,044	1,622	2,011	2,394	157
<i>total credit</i>							
No change in type:							
Cotton-----	1,510	1,645	1,691	1,738	1,608	1,794	19
Combination-----	2,475	3,531	3,650	3,688	4,550	6,400	159
Livestock-----	4,729	4,135	5,147	5,971	7,982	10,024	112
Changed type to:							
Combination-----	2,768	2,868	3,382	3,882	4,464	4,854	75
Livestock-----	2,089	2,322	2,717	2,994	3,550	3,811	82



Farm families enjoy better living as the income from the farm increases.

livestock farms throughout the period were using more than twice as much credit in 1951 as in 1946. The fact that farmers who had been producing livestock for several years rapidly continued to increase the amount of credit used, indicates that the process of making adjustments in type of farming may be an extended one requiring the use of credit for as long as 5 or 10 years.

In 1951, the average cotton farmer was using about \$1,800 in credit. Farmers who had recently changed their type of farming were using more than twice that amount of credit. Farmers who had had combination or livestock farms for a number of years were using three to five times as much credit as cotton farmers. If the comparison is limited to units which were of similar size in 1946, farmers who had recently changed type generally used 50 percent or more credit than cotton farmers while credit used by combination or livestock farmers for several years was usually triple the amount used by cotton farmers.

Since the value of farm assets, size of farm, and sales of farm

products are important in extending credit, farms were placed in small, medium, and large groups according to the 1946 value of these three factors. Again it was evident that farmers who had changed to livestock and combination type farming were using considerably more credit than cotton farmers -- usually 50 percent or more. For example, in the group of farmers with large assets in 1946, average credit used by cotton farmers amounted to about \$3,500 in 1951, while those farmers who had changed to combination and livestock farming were using credit totaling about \$6,000. In most size groups (assets, acreage of farm, or sales of farm products in 1946), farmers on livestock and combination type farms for several years were using roughly one and one-half to two times as much credit in 1951 as farmers who had recently changed to livestock or combination types of farming. Amounts of credit used by farmers who had been in livestock and combination type farming for several years were usually triple the amount used by cotton farmers.

Thus, without considering factors other than type of farm and whether or not farmers changed type, the conclusion may be reached that farmers who had recently changed their type of farming required more than twice as much credit as cotton farmers. And, after farmers have been engaged in combination or livestock farming for a number of years, they need three to five times as much credit as they did when they were cotton farmers.

Type and Source of Credit Used

Since this part of the study was limited to members of production credit associations, it is not unusual that in 1951 most of the groups of farmers obtained more than three-fourths of their total

credit from production credit associations (figure 4 and table 9). In 1946, combination and livestock farmers who remained in that type of farming throughout the period were using their production credit associations as their major source of credit. On the other hand, cotton farmers and those farmers who changed to combination or livestock type farming used their production credit associations for only about 40 to 50 percent of their total credit needs in 1946. However, by 1951 they were obtaining about three-fourths of their credit from their associations.

Real estate -- farm mortgage -- credit in 1951 accounted for 16 percent or less of total credit used on these farms except those which had changed to combination or livestock farming. These

The Proportion of Credit Most Farmers Obtained With Mortgage Loans Declined from 1946 to 1951

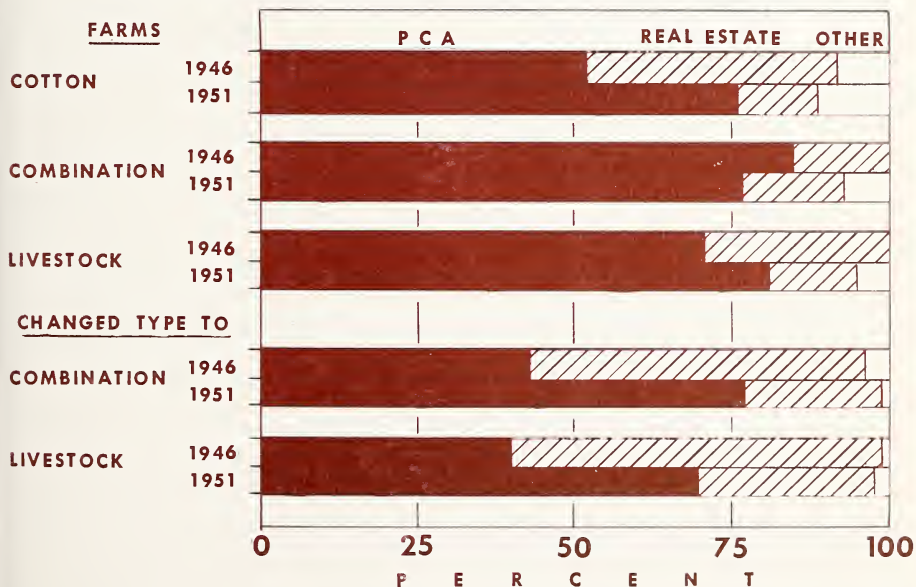


Figure 4

Table 9. - *The Percentage of Production Credit Association, Real Estate, and Other Credit Used in 1946 and 1951, by Type of Farm*

Type of farm	1946			1951		
	PCA	Real estate	Other	PCA	Real estate	Other
	<i>Percent of total credit</i>					
No change in type:						
Cotton-----	52	40	8	76	13	11
Combination-----	85	15	0	77	16	7
Livestock-----	71	29	0	81	14	5
Changed type to:						
Combination-----	43	53	4	77	22	1
Livestock-----	40	59	1	70	28	2

farmers were using real estate credit for about one-fourth of their total credit needs. On all farms, except those of combination type throughout the period, real estate credit comprised a larger proportion of total credit in 1946 than in 1951. The decline in the relative proportion of real estate credit used was due, not to a reduction in the amount of this type of credit used, but rather to a substantial increase in the amount of production credit obtained from production credit associations. In fact, the average amount of real estate credit used on all farms was greater in 1951 than in 1946. But over this same period of time the average amount of credit obtained from PCA's more than doubled.

PCA Loans Classified

In view of the special need for funds by farmers making changes in type of farming, it is important to examine the PCA loans in this study. The loans made were classified as follows: (1) operation, (2) investment, (3) renewal, and (4) miscellaneous. Loans for operating expenses are those

expected to be repaid when crops or livestock are sold except in emergencies when these loans may be renewed. Loans for investment purposes are used to purchase farm production items which have a useful life of more than one year such as livestock and farm equipment. In the Third Farm Credit District, members obtaining such loans are encouraged to repay at least one-third the first year with provision, if needed, for renewal of the balance of the loan after the first year and any remainder at the end of the second year. Thus, loans may be renewed either as a result of unfavorable farm income or of "planned renewals" of loans to purchase livestock, farm machinery or other equipment.

In 1946, cotton farmers used about three-fourths of their total loans for operating purposes and about one-sixth for investment purposes, and only 4 percent was for renewals of loans. By 1951, cotton farmers had reduced the proportion of loans used for operating expenses and had a larger percentage of their loans renewed. There was little change in the proportion used for investment

purposes. Even after the reduction from 1946, cotton farmers were still using in 1951 a much higher portion of their loans for operating purposes than for any other purpose. The greater renewals in 1951 were due, at least in part, to the poor cotton crop in that year.

Farmers who had combination or livestock farms continuously or who changed to those types decreased the percentage of their loan funds used for operations more than did cotton farmers. They generally increased the share for investment compared with a decrease by cotton farmers for that purpose. Combination and livestock farmers likewise increased their renewals and in 1951 these were substantially higher than renewals by cotton farmers.

Renewals by combination and livestock farmers in 1951 may have been partly influenced by the poor cotton crop but for the most part represented "planned renewals" of short-term loans originally made to buy such items as livestock, farm machinery and equipment. If such renewals are considered as additions to the portions of the loan specifically classified as for "investment," it is apparent that production credit associations are furnishing combination and livestock farmers relatively large amounts of credit for capital purposes. This is indicated conversely, of course, by the smaller percent of loans used for operating purposes.

The greatest use of credit for investment purposes, such as buying livestock and farm equipment, was by the group of farmers that had followed the livestock type continuously. In 1951, they used only 17 percent of their loans from production credit associa-

tions for operating purposes, 41 percent was for investment, and 42 percent represented loans they had renewed. The sharpest shifts from operating to investment and renewal, however, were made by those farmers who were changing from cotton to combination or livestock farming. These farmers changed from using about two-thirds of their loans for operations in 1946 to only about one-third for that purpose in 1951.

In computing the percentage of loans renewed in table 10, the



Some farmers who shift to dairy cattle or add to their herds have to build barns.

amount of renewals during the year was computed as a percent of the total of cash advances plus renewals during the same year. Renewals also may be shown as a percent of the total amount of production credit association loans, including renewals, during the preceding year. When expressed in this way, the resulting relationships and conclusions are virtually the same as those indicated in table 10. For purposes of comparison, the percentages

Table 10. - Percent of Amounts of Loans from Production Credit Associations for Operating and Investment Purposes and Those Renewed in 1946 and 1951, by Type of Farm

Type of farm	Loans ¹								
	Operating			Investment			Renewal		
	1946	1951	Change	1946	1951	Change	1946	1951	Change
No change in type:									
Cotton-----	76	64	-12	18	16	-2	4	14	+10
Combination-----	59	36	-23	21	31	+10	15	28	+13
Livestock-----	27	13	-14	43	41	-2	24	42	+18
Changed type to:									
Combination-----	66	33	-33	19	21	+2	3	36	+33
Livestock-----	69	34	-35	7	36	+29	21	24	+3

¹The percents for the three types shown for each group of farms do not add to 100 since the "Miscellaneous" purpose is omitted from this table.

which renewals were of the previous year's total amount of loans in 1951 were as follows:

Type of farm	Percent renewed
No change in type:	
Cotton	16
Combination	37
Livestock	51
Changed type to:	
Combination	45
Livestock	26

It is apparent from the loan data that livestock farmers or those who are changing to livestock types are much larger users of credit for investment and have more loans renewed than cotton farmers. On the other hand, farmers with livestock enterprises used a greater proportion of their loans for capital investment and renewed more loans than did cotton farmers. Livestock farmers who did not change their type of farming were still making adjustments requiring credit for investment purposes. Thus, the credit they were using for investment purposes and in renewed loans commanded a relatively large proportion of total loans.

Collateral Available

In view of the greater needs for credit in some types of farming, it is important to consider factors which may affect the availability of such credit. One such factor is the amount of collateral a farmer can offer as security for his loan. While not a completely satisfactory measure, the relationship between the value of assets and the amount of loans throws some light on differences in the availability of collateral.

The value of total assets to total credit used was generally higher on cotton farms than on farms of other types. Those farmers who had been on combination or livestock type farms throughout the period tended to have a lower value of total assets per dollar of credit used than other farms. Apparently, borrowings were greater in relation to a given amount of assets on farms with livestock enterprises than on cotton farms.

The relationships between total credit and total assets are shown in table 11. In 1946, farmers who had been on livestock farms

Table 11. - Value of Total Assets per Dollar of Total Credit Used, by Type of Farm, 1946-51

Type of farm	1946	1948	1950	1951
No change in type:				
Cotton-----	\$5.27	\$5.64	\$5.90	\$6.20
Combination----	6.62	6.00	5.38	4.69
Livestock-----	3.33	3.83	3.26	3.79
Changed type to:				
Combination----	3.86	3.95	3.71	4.17
Livestock-----	5.89	6.02	5.28	6.45

throughout the period, used one dollar of total credit for every \$3.33 of the total value of their assets. Farmers on combination type farms throughout the period had the highest value of total assets per dollar of total credit used in 1946, \$6.62. Cotton farmers and those farmers who changed to livestock farming had total asset values, respectively, of \$5.20 and \$5.89 per dollar of total credit used in 1946. Farmers who changed to combination farming were using, in 1946, one dollar of credit for each \$3.86 of total asset value.

In 1951, farmers who had livestock type farms throughout the period still had the lowest total asset value per dollar of credit used, \$3.79. These were followed by farmers who changed to a combination of cotton and livestock \$4.17, farmers who were on combination farms throughout the period \$4.69, cotton farmers \$6.20, and those farmers who changed to livestock type \$6.45.

It is apparent that those farmers who had livestock or a combination of cotton and livestock

farms throughout the period used considerably more credit, relative to total asset value, in 1951 than cotton farmers or those farmers who changed to livestock production. One would expect that needs on a farm making adjustments in type of farming might be greater than on farms which did not change type. However, when dealing with groups of farms, there are many uncontrollable factors. For example, even though cotton farmers did not change type, they made adjustments such as a shift to greater use of machinery. It is also possible that those farmers who changed type did so partly because they had accumulated sufficient assets so that the adjustment could be completed with little more credit relative to assets than would have been required to remain in their original type. Another factor is that those farmers who changed type accumulated assets at a rather rapid rate and once the process of adjustment was begun, growth in asset value may have exceeded the increases in credit needs.

Study and Budget, Farmer A

AS already pointed out, the experience data for the 200 PCA borrowers were supplemented

by a detailed study or budget plan for 10 future years, 1953-62, for one farmer who was using credit

from his production credit association to expand his dairy herd in order to shift to the production of Grade A milk. The analysis is made for both stable and declining prices.² Such an analysis provides a basis for testing the effectiveness of specific combinations of resources available to a farmer, at specific rates of input, and for specific types of output. Thus, it provides a way of determining whether various research results from limited studies can be combined on an individual farm with profit and whether the proposed program can be financed on a sound basis.

The 10-year budget analysis of this Southern Piedmont farm indicates the practicability of making adjustments in type of farming. Total investment on this farm would almost double over the 10 years of the budget. This increased investment would be obtained initially by using credit which could be repaid from farm earnings. The amount of credit used would increase for about 4 years following the beginning of the adjustment and would then decline rather rapidly if prices which prevailed in 1952 are used. Under stable prices, the loans used to establish a Grade A dairy herd on this farm could be repaid in about 7 years. With declining and less favorable prices, total repayment of loans would take about 9 years. While the loans were economically profitable, it appears unlikely that Farmer A could be financed adequately

under a 3-year renewal provision. Since credit is needed over a period of from 7 to 9 years, it appears that Farmer A might advantageously use a long-term real estate loan with optional repayment provisions for a portion of his credit needs.

Farm Resources

Typical of many part-time farmers in industrialized areas of the Southern Piedmont, Farmer A had worked for several years in a nearby factory. He and his wife were both about 40 years old and were hard workers, intelligent, and willing to learn. Their 17-year-old son, a vocational agriculture student, took an active interest in the farm.

The farm was typical of much of the North Carolina Piedmont area. It was hilly and the soil was mostly red clay with some bottomland. Of a total of 87 acres, there were 17 acres in permanent pasture and 33 acres of tillable land. Much of the cut-over woodland could be cleared for pasture or cropland.

From 1946 to 1951 about 6 acres of cotton were planted annually. Since 1951, no cotton was grown and some of the land was not used to the fullest extent possible. The principal source of cash farm income in 1952 was from the sale of milk from eight Guernsey cows producing about 5,000 pounds of milk a cow a year. This dairy enterprise began from the sale of milk from two cows several years ago. The enterprise grew slowly from natural increases in the herd and no additional cows were purchased. Total sales of milk in 1952 amounted to about \$1,400 and non-farm income was \$2,400.

²Prices prevailing in 1952 were used for the stable price level. Under declining prices, the assumption was made that, over a 5-year period, prices received would decline to 80 percent and prices paid to 90 percent of 1952.

Buildings at the beginning of the budget period consisted of a general purpose barn which would be suitable for feed storage for only a few years. Sheds for machinery storage and general use were available. The dwelling was in a fair state of repair. Silage was stored in a temporary upright silo.

Machinery consisted of a small two-row tractor and equipment such as plows, disc harrow, cultivator, and grain drill. Equipment not owned such as a hay baler, combine, silage chopper, and feed grinder, was hired on a custom basis or obtained by a cooperative arrangement with neighbors. A pick-up truck was used for farm and family use.

Farmer A's financial condition was good (table 12). He had purchased the farm in 1946 and it was debt-free. At the time he applied for his first loan from his production credit association to finance improvements, his only liability was an outstanding balance of \$961 owed on the tractor and truck.

Adjustment Plans

In the early part of 1953 (first year of budget), a Grade A dairy barn was completed and Farmer A began selling Grade A milk from eight cows. He planned to increase his herd to 20 cows in milk from young stock grown on the farm and by purchasing only two cows. He envisioned expenditures for land clearing, pasture seeding, fencing, and building a feed barn. At such time as the farm will provide full-time employment, Farmer A plans to discontinue off-farm work.

Farmer A had a definite idea of his ultimate goal but had not made detailed plans for attaining this goal. His decision to grow into a 20-cow Grade A dairy enterprise was probably based on such factors as past experience, observing neighbors with dairy enterprises, and recommendations of local agricultural leaders. Having made a sound basic decision, it would appear logical to "grow into" a 20-cow dairy

Table 12. - *Financial Statement, Farmer A, Before Budget Program Began in Fall of 1952*

Item	Value
Assets	
Real estate-----	\$4,000
Livestock-----	2,150
Machinery-----	2,600
Liquid-----	400
Total assets¹-----	9,150
Liabilities¹-----	961
Net worth-----	8,189
Owner equity-----	89%

¹Prior to obtaining initial PCA loan.

enterprise rather than to follow detailed plans.

The budget attempts to develop the details of establishing the dairy enterprise. Information obtained from both Farmer A and the North Carolina Experiment Station was used in developing the budget.

Analysis Under Stable Prices

This 10-year budget began in the early fall of 1952 and the following 12 months were designated as the year 1953. The following years were assumed to begin in the early fall. The initial PCA loan was made in August 1952. The analysis, therefore, traces the development of the farm from the beginning of the major adjustment of establishing and enlarging a Grade A dairy enterprise.

Cash receipts and expenditures were estimated annually for the

years 1953 to 1962, using prices which prevailed the latter part of 1952. Annual milk production was assumed to be 5,000 pounds per cow for the first 3 years and increased to 5,150 pounds over the following 3 years. Total expenditures -- operating, investment, and living -- and total receipts -- farm and non-farm -- were used to determine amounts borrowed and repaid.

Assuming that all of the initial PCA loan of \$3,150 was extended at the beginning of 1953 the maximum balance over the adjustment period occurred at the beginning of the first year. Debts could be reduced \$829 in 1953, but increased credit needs would bring the outstanding balance at the end of 1955 and 1956 to \$3,086. Rather rapid repayments would occur in 1957 and 1958, the balance being reduced to zero in 1959 (table 13). Accumulation of

Table 13. - *Estimate of Farmer A's Credit Needs at End of Year Assuming Stable Prices, 1952-62*

End of year	Cash receipts	Cash expenses ¹	Difference ²	Debt (-) reserves (+)
1952-----	-	-	-	⁷ -\$961
1953-----	³ \$6,155	\$7,515	-\$1,360	-2,321
1954-----	⁴ 5,194	⁵ 5,194	-	-2,321
1955-----	5,065	5,830	-765	-3,086
1956-----	6,646	⁵ 6,646	-	-3,086
1957-----	7,668	6,132	1,536	-1,550
1958-----	7,733	⁵ 6,948	785	-765
1959-----	7,928	⁶ 7,163	765	0
1960-----	7,928	6,492	1,436	+1,436
1961-----	7,928	6,423	1,505	+2,941
1962-----	7,928	7,314	614	+3,555
Total-----	70,173	65,657	4,516	-

¹Investment, annual operating, and family living expense.

²Minus figure indicates increase in debt.

³Includes \$2,400 off-farm income.

⁴Includes \$1,200 off-farm income.

⁵Living expenses adjusted slightly (less than \$25 per year).

⁶Upon repayment of all debt, living expenses were allowed to increase from \$1,200 per year to \$2,400.

⁷The \$961 at the end of 1952 was the outstanding balance on a previous purchase of a tractor. This amount was included in the \$3,150 original loan from the Production Credit Association to start the program.

Table 14. - *Estimated Cash Investments of Farmer A, Assuming Stable Prices, 1953-62*

Year	Buildings	Machinery	Cows	Pasture and fencing	Land clearing	Total
1953-----	\$1,200	\$1,050	\$600	-	-	\$2,850
1954-----	-	-	-	\$604	\$450	1,054
1955-----	-	-	-	675	500	1,175
1956-----	750	-	-	370	350	1,470
1957-----	-	1,000	-	96	-	1,096
1958-----	-	1,350	-	468	-	1,818
1959-----	-	735	-	288	-	1,023
1960-----	-	-	-	330	-	330
1961-----	-	-	-	288	-	288
1962-----	-	1,000	-	112	-	1,112
Total -	1,950	5,135	600	3,231	1,300	12,216

cash reserves for the remaining years of the budget (allowance was made for increased living costs) indicates that the farm would probably be self financing after repaying debts in 1959. However, if cash reserves were not accumulated, additional credit might be necessary to replace items such as the tractor, truck, and other equipment.

Over the 10-year budget period, expenditures for investment items would total \$12,216 with 54 percent, \$6,549, being spent during the first 4 years. Of expenses, with living costs held constant, about 41 percent of the 10-year total would occur during the first 4 years. But of the \$70,173 cash receipts, only 33 percent would be received over the first 4 years (tables 13 and 14).

Analysis Under Declining Prices

Under declining prices, there would be an increase of 31 percent in maximum end-of-year credit and it would require 2 years longer to repay debts (figure 5).

The difference in indebtedness as between stable and declining prices would gradually become greater. After 1958, the difference would be even greater than indicated in figure 4 because of cash surplus would have accumulated and living costs would have increased during the period of stable prices. Expenses for replacing items such as tractor, truck, and other equipment would begin in 1957, causing an increase in credit used under declining prices (figure 5, table 15).

It was assumed that living costs would not rise until all indebtedness had been repaid, thus living standards of the farm family did not increase as rapidly under declining as under stable prices. If living costs under the declining price level had been allowed to increase to the \$2,400 (equivalent) figure used under stable prices during the last 4 years of the budget, it would take several years longer to repay the loan.

By 1963, a new tractor and other equipment should be purchased and fences and the house would be in need of repair. This

Farmer A Would Use More Credit for a Longer Time with Declining Prices

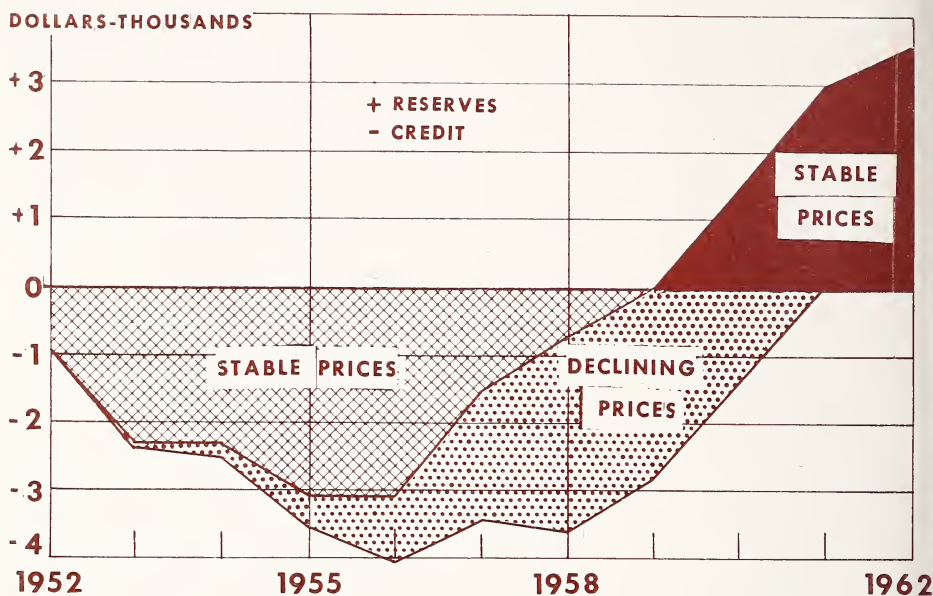


Figure 5

Table 15. - Estimate of Farmer A's Credit Needs at End of Year Assuming Declining Prices, 1952-62

Year	Cash receipts	Cash expenses ¹	Difference ²	Debt
1952-----	-	-	-	⁶ \$961
1953-----	³ \$6,032	\$7,446	-\$1,414	2,375
1954-----	⁴ 4,882	5,044	-162	2,537
1955-----	4,558	5,557	-999	3,536
1956-----	5,716	6,223	-507	4,043
1957-----	6,288	5,682	606	3,437
1958-----	6,186	6,376	-190	3,627
1959-----	6,342	5,586	756	2,871
1960-----	6,342	4,893	1,449	1,422
1961-----	6,342	⁵ 4,920	1,422	0
1962-----	6,342	6,342	0	0
Total-----	59,030	58,069	+961	-

¹Investment, annual operating and family living expense.

²Minus figures indicate increase in debt.

³Includes \$2,352 off-farm income.

⁴Includes \$1,128 off-farm income.

⁵Upon repayment of all debt, living expenses were allowed to increase.

⁶The \$961 at the end of 1952 was the outstanding balance on a previous purchase of a tractor. This amount was included in the \$3,150 original loan from the Production Credit Association to start the program.

expenditure in addition to annual expenditure for pasture reseeding may require borrowed funds under a lower level of prices. Thus, assuming less favorable prices, credit would be needed over a period of perhaps 10 to 12 years or more from the time the adjustment was initiated. There would be periods of a year or so when the farm would be debt-free followed by periods when credit would be used but perhaps not in as large amounts as during the first years following the adjustment.

It seems logical from the general nature of farming, that indebtedness of individual farms would tend to be cyclical in nature. Farmers do not generally set aside cash depreciation allowances for replacing farm equipment. If such items are purchased initially with borrowed money, the tendency is to repay the debt at a faster rate than the items depreciate so that credit used to purchase one

item tends to be repaid while fully owned items depreciate without appropriate reserves. Thus, credit may again be used for repurchase of the latter item when it is replaced.

Economic Practicability of Loan

In considering plans for financing, a basic question must be answered: Is there economic justification for financing the adjustment as budgeted?

Before the budgeted adjustments were initiated, Farm A furnished only part-time work for the farm family and provided little labor income and return to capital. But over the last 4 years of the budget (stable prices) (1) farm income would average \$3,236 annually, (2) annual labor income would average \$2,375, and (3) return to capital would average 4.4 percent per annum (table 16). Labor earnings were less than wages

Table 16. - Measures of Farmer A's Estimated Earnings under Stable Prices

Year	Farm income	Labor income	Percent of return on investment ¹
1953-----	\$1,323	\$898	(2)
1954-----	1,614	1,095	(2)
1955-----	2,481	1,897	.6
1956-----	2,801	2,152	2.8
1957-----	2,975	2,250	3.6
1958-----	3,159	2,351	4.2
1959-----	3,232	2,360	4.3
1960-----	3,251	2,372	4.4
1961-----	3,276	2,425	4.6
1962-----	3,184	2,344	4.2

¹Assumes operator's labor to be worth \$2,400 annually.
²Minus "return."



When beef cattle are added to the farm, farmers need money to buy foundation animals.

from industrial work but personal preference and security of employment probably would offset the difference. Also, the \$2,400 annual salary from off-farm work in 1952-53 included some expenses which would have reduced the net. In view of the increased earning capacity, the adjustments, and

thus the financing of the adjustments, would be justifiable.

Financial progress is a good criterion for determining the economic justification for financing a farm. With either stable or declining prices, Farmer A would increase both his net worth and total assets over the period of debt repayment. Furthermore, owner equity in the farm was never lower, under either stable or declining prices, than when the adjustment was initiated (table 17 and 18).

Assuming the 1953 production credit association loan of \$3,150 -- \$961 for debt refinancing and \$2,189 for dairy barn and equipment -- to have been disbursed in a lump sum at the beginning of the year and adding to asset values the items purchased with the loan, there would be a total of \$3.60 in assets for each dollar of credit. Under neither level of prices used did this ratio of credit to total assets fall below the 1953 figure. Thus, on the basis of total collateral available, the loan would have been well secured throughout

Table 17. - Estimated Summary of Farmer A's Financial Statements Assuming Stable Prices, 1953-60

Beginning of year	Total assets	Debt	Net worth	Percent equity
1953-----	¹ \$11,339	\$3,150	\$8,189	72
1954-----	13,033	2,321	10,712	82
1955-----	14,657	2,321	12,336	84
1956-----	16,703	3,086	13,617	82
1957-----	18,305	3,086	15,219	83
1958-----	18,544	1,550	16,994	92
1959-----	19,696	765	18,931	96
1960-----	19,815	0	19,815	100

¹Credit at the beginning of 1953 consisted of both a \$961 old debt and \$2,189 of "new money" included in his first production credit association loan. The new money was added to total assets as of the end of 1952 in order to calculate owner equity --- \$9,150 + \$2,189 = \$11,339. In other years, credit outstanding at the end of the year was related to assets as of the beginning of the next year.

Table 18. - *Estimated Summary of Farmer A's Financial Statements Assuming Declining Prices, 1953-62*

Beginning of year	Total assets	Debt	Net worth	Percent equity
1953-----	¹ \$11,339	\$3,150	\$8,189	72
1954-----	12,512	2,375	10,137	81
1955-----	13,484	2,537	11,147	83
1956-----	14,699	3,536	11,163	76
1957-----	15,376	4,043	11,333	74
1958-----	14,835	3,437	11,398	77
1959-----	15,757	3,627	12,130	77
1960-----	15,852	2,871	12,981	82
1961-----	15,384	1,422	13,962	89
1962-----	14,881	0	14,881	100

¹See footnote on table 17.

the period of adjustment, even in the event of a rather severe decline in inventory value (table 19 and 20).

It is doubtful that a loan could have been obtained with only real estate as security since there was only \$1.63 of real estate value to each \$1.00 of credit at the beginning of the adjustment. Real estate value tended to decline as a percentage of total assets (figure 6), but under stable prices the ratio of credit to real estate value rose after the first year to over 1 to 2 which is probably sufficient for a

real estate loan. Using a declining price level, this ratio would fall in 1957 to a figure slightly below that of 1953 and would not rise to a ratio of 1 to 2 until 1960 (tables 19 and 20).

Short-term loans are often secured with machinery, livestock, and supplies; thus ratios of credit to value of (1) machinery and livestock, and (2) machinery, livestock, and feed supplies, were calculated. The lowest ratios for these categories under stable prices occurred in 1953. Value of machinery, livestock and supplies

Table 19. - *Estimated Value of Farmer A's Groups of Assets per Dollar of Total Credit under Stable Prices, January 1, 1953-58¹*

Asset group	Year					
	² 1953	1954	1955	1956	1957	1958
Real estate-----	1.63	2.16	2.50	2.15	2.50	4.76
Machinery, livestock----	1.84	2.70	2.81	2.31	2.42	5.19
Machinery, livestock, supplies-----	1.97	3.45	3.81	3.26	3.43	7.20
Total assets-----	3.60	5.62	6.31	5.41	5.93	11.96

¹Ratios were determined by dividing each asset group by total credit outstanding at the beginning of the year. Thus, only the credit to total asset ratio gives actual financial position. Assumes that the new loan of \$2,189 obtained at beginning of 1953 was used as follows: dairy barn, \$1,139; dairy equipment, \$1,050. These values were added to values of appropriate asset groups.

Table 20. - *Estimated Value of Farmer A's Groups of Assets per Dollar of Total Credit Assuming Declining Prices, January 1, 1953-60*¹

Asset group	Year							
	² 1953	1954	1955	1956	1957	1958	1959	1960
Real estate---	1.63	2.03	2.28	1.65	1.60	1.72	1.66	2.07
Machinery, livestock---	1.84	2.53	2.57	1.78	1.55	1.87	2.00	2.59
Machinery, livestock, supplies----	1.97	3.24	3.49	2.50	2.20	2.60	2.69	3.45
Total assets-	3.60	5.27	5.77	4.16	3.80	4.32	4.34	5.52

¹See footnote on table 19.

²See footnote on table 19.

Farmer A's Non-Real Estate Assets Increased More than His Real Estate Assets, Assuming Stable Prices, 1952-63

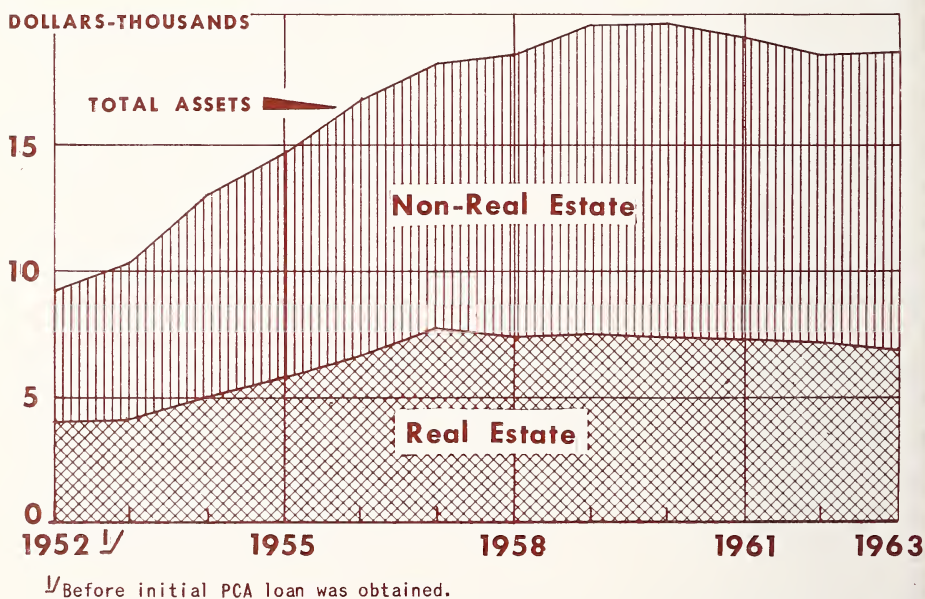


Figure 6

per dollar of credit, with falling prices, would not fall below the 1953 figure in any following year. However, the value of machinery and livestock per dollar of credit under declining prices would fall somewhat below the 1953 figure in 1956-57 (declining prices) (table 20).

Measures of earnings and financial progress do not provide answers as to whether or not the budgeted plan is the most profitable enterprise combination. These measures do, however, indicate that the farm earnings can be expected to improve as the adjustment proceeds. It can be concluded, based on earnings and financial progress, that the loan as budgeted is economically practicable.

Using collateral as the primary consideration in examining the feasibility and assuming that the initial loan was practicable, these conclusions can be made: (1) Under stable prices, all credit to collateral ratios were more favorable after the initial loan, thus the entire credit needs were justifiable. (2) Under declining prices, some of the collateral ratios became less favorable after 1953 but strengthened in later years. Thus, if loans secured either by real estate alone or machinery and livestock had been considered marginal in 1953, difficulty would have been encountered in later years, although budget analysis showed sufficient repayment capacity over a longer period.

General Conclusions

THE records of the 200 PCA borrowers and the more detailed study of Farm A indicate results of significance to farmers in the Southern Piedmont and elsewhere who are interested in improving farm income and living levels.

Resource Allocation

While this study has shown the income possibilities from livestock enterprises, livestock production is not necessarily a "cure-all" for the low income problem of the Southern Piedmont. Not all Southern Piedmont farmers can make a profitable change from cotton to livestock production. Management may be a limiting factor in some cases. No doubt, many cotton farmers can use their available credit and other resources to better advantage by

increasing their efficiency in cotton production rather than by changing to livestock production.

A farmer's problem is how to use the resources available to him so as to make the most effective increases in income. He must consider the best combination of resources which he can work out in attempting to improve his productivity and income. His main resources include management ability and "know-how," land which he owns or may be able to rent, livestock, machinery, crops and other supplies, cash, his own labor and that of his family, and finally and possibly one of the most important, his ability to borrow.

There are many things to be considered in working out the best possible use of the resources of a farm. Possibly of first importance is a decision with respect

to what products are to be produced for sale. In making this selection, a farmer will be governed to a considerable extent by the characteristics and amounts of the resources available to him. His land may not be suitable for certain types of production. Markets may govern his choice. His personal likes or "know-how" may be important factors.

A second phase of the problem is to make decisions with regard to which of the resources available can be applied most effectively in the particular types of production selected. For example, in producing milk, there may be a choice between peanut meal or cottonseed meal in the feed ration. Within limits, hay or pasture can be substituted for grain while machine milking can be substituted for hand milking.

The third consideration is how much of different types of resources will it pay to put into the job, or "quantity of inputs." Some of the resources which the farmer will have are fixed in amount and characteristics. Others such as fertilizer, labor, and feed are variable and can be used in various amounts.

A fourth consideration concerns uncertainty and variability of income. The outcome of farming decisions can seldom be known with certainty. Some farmers are more willing to "take a chance" than others. Thus, farmers in similar circumstances may make different decisions. Year-to-year income variation also involves personal preferences; some farmers prefer a stable income to a higher one which varies from year to year. Because of these personal preferences, the "best" decision can often be made only by individual farmers.

The analysis of the 200 cases and also of Farmer A has thrown some light on all four of the foregoing phases of the problem of allocating resources in the Southern Piedmont. Credit is one of the resources available to virtually all farmers. Since this study is more directly concerned with the use of credit in improving productivity and farm income, special attention will be given to certain conclusions regarding the use of credit in increasing productivity.

Characteristics of Investment Requirements

One of the most important considerations is the investment required in working out the best possible allocation of resources. As shown in the analysis of the 200 farmers with loans from production credit associations and the study of Farm A, there are several significant characteristics of the investment requirements. In the first place, investments usually are relatively large. To establish a pasture in the Southern Piedmont, for example, may require expenditures two, three, or more times as great as the value of the land. Additional investment in pasture, buildings, equipment, and cows for dairy production may equal or exceed present investment on a cotton farm. These investment requirements are likely to call for a revision of rules which lenders and to some extent farmers may have established in previous practice with respect to the amount of credit which should be used.

The pattern of the returns on such investments is likely also to be different from the usual pattern. There may be a period of several years after the investments are

made when relatively less income is received. This must be recognized in any financing program.

The peak of investment and credit requirements may occur sometime after the beginning of the adjustment. Thus, a farmer undertaking to establish a dairy enterprise might in successive years (1) establish pasture, (2) purchase heifers, or (3) build a barn. This build-up of needs must be expected when undertaking a financing program.

Certain proportions of "inputs" are likely to be necessary in order to attain maximum efficiency in production and thus it is important that both the lender and the farmer realize that there may be inadequate returns or even loss if the adjustment program is carried only "half-way." For example, investments in putting in pasture, building a dairy barn, and installing a milking machine must be followed by adding more cows.

Investment funds must be considered as a joint interest with management. Establishing new enterprises or expanding existing enterprises generally requires a higher order of management than before. Consequently the "know-how" must be enlarged and applied more effectively as the investment increases.

Adapting Management to Resource limitations

Where credit and a farmer's own funds are a factor limiting the rate at which investments can be made, farm management plans can be modified to fit the available funds. One important type of modification is to reduce short-run expenditures. Such adjustments might include spending less for family living, postponing

certain types of investment, using custom service instead of purchasing some farm machinery, using labor available on the farm instead of machinery, and making various other types of substitutions such as renting land or pasture in order to postpone the investment needed in clearing land and establishing pastures. Another modification is to increase cash receipts through such devices as off-farm work and increasing some types of production temporarily through greater use of fertilizer or possibly through liquidation of assets such as the sale of timber.

The slower pace in carrying out farming adjustments, imposed by a farmer's capital, by the amount he can borrow, or other limitations, may actually turn out to be an advantage in some instances. At a slower pace there is greater opportunity to develop management skill in any new enterprises or techniques. Likewise, if mistakes



Dairy farmers frequently use credit to buy labor saving milking and cooling equipment.

are made, losses will tend to be smaller if the rate is slow, and there will be vulnerability to a moderate debt rather than to the larger debt that would probably accompany a complete shift in a relatively short time.

Credit Terms and Arrangements

The borrowers and the farm studied showed that farmers used various combinations of short-term production credit association and long-term real estate credit and that there was opportunity for a variety of terms, security, and other arrangements.

The following observations regarding the adaptability of such arrangements to the needs in financing a farm adjustment program are based on the study of this experience.

One of the most important of these arrangements is the term of years or the length of the repayment period agreed upon by the lender and borrower. Production credit associations ordinarily make loans with maturities for not more than 1 year. Where there is a need for a longer repayment period, the general policy is to renew no more than two-thirds of the original loan the first year and one-third the second year.³ This annual renewable term arrangement appears to have these advantages to the borrower:

(1) Advances and repayments can be made highly flexible; plans can be revised or changed quickly.

³Many production credit associations are now experimenting with the use of notes written for terms up to 3 years for loans that are used to finance capital improvements with an agreement that the interest rate may be adjusted upward or downward to conform with changes in the regular lending rate of the association. Under such a policy, the following comments with respect to interest rates would not be applicable.

(2) Larger loans relative to the available collateral can be made than with loans written for longer terms.

(3) If interest rates fall, prompt adjustment in the rate paid by the borrower can be made.

The disadvantages to the borrower are:

(1) Varying degrees of uncertainty as to renewal conditions, especially since any agreement is on an oral basis.

(2) Possibility of "credit rationing" due to rigid renewal policies or regulations.

(3) Interest costs may go up more promptly if general interest rates rise.

An annual renewable loan is an advantage to both lender and borrower because the farming operations can be appraised annually, thus facilitating the making of any needed changes in plans. Since borrowers ordinarily do not make long-range plans in detail, it is necessary to provide for making revisions of original plans and working out details on a year-to-year basis.

From the lender's standpoint, annual renewable loans provide greater liquidity. There is also closer control of the situation with respect to both interest charges and volume of credit outstanding.

These considerations warrant several observations. In the first place, in those instances where the loan is on an annual renewable basis, it seems reasonable to assume that the farmer should have a concise understanding of the renewal terms -- for example, the amounts which possibly can be renewed and the conditions under which the renewal will be made. Although the borrower may have confidence in the lending

stitution and its personnel, a written agreement nevertheless would provide a clearer understanding of the renewal terms for both borrower and lender.

A second observation relates to the maximum amount of renewal. The policy in the Third Farm Credit District of limiting the renewal to no more than two-thirds of the original loan the first year and one-third the second year except under "disaster" conditions, has advantages to the lender in preventing undue debt accumulation. If rigidly adhered to, however, it may have absurd results in individual cases. It was noted from one loan folder, for example, that in order to repay maturing loan balance on a production credit association loan, a farmer borrowed from a bank. A short time later he borrowed from the association to repay the bank. In other instances the rule was technically followed by the making of "new" loans or renewals which pay off the old balances.

There would seem to be advantages in writing loans with maturities of 2 to 7 years in appropriate cases when financing adjustments which will require several years to repay the loan. This would put repayment terms stated in the note on a basis more in line with the repayments actually anticipated. Supplementary short-term credit may be necessary to take care of the annual production needs. The writing of such intermediate-term notes would appear to be practicable, particularly with careful selection of borrowers.

In many instances and where real estate is available as collateral, adjustment programs can be financed with long-term real



Farmers increase crop yields by using improved seeds, fertilizers and insecticides.

estate credit. Interest costs on such long-term loans will tend to be lower than on short-term loans, especially if the note permits flexibility in the rate at which the loan may be repaid.

In actual practice, financing programs generally will be a combination of long- and short-term loans. The experience of PCA borrowers and particularly the analysis of the study of Farm A suggest that long-term credit should be used:

(1) When credit is needed continuously over a period of years. It is not important whether this credit is used for long-term investments or for a series of short-term investments. The important fact is that credit will be needed over a relatively long period of time.

2. When there is a possibility that changing economic or other conditions will extend the length of time credit is needed.

This study suggests further that under a situation similar to that in the study of Farm A where an adjustment program is to be

financed:

1. The long-term loan generally should not exceed the average amount of credit needed over the first several years.

2. Amortization should be over a fairly long period (20-30 years) so that annual repayments will be low.

3. Provision should be made for flexibility in repayment, per-

mitting --

(a) Advanced or delayed annual payments.

(b) Complete repayment option after, say, 5 years.

In such circumstances, shorter term credit would be used to take care of seasonal fluctuations in credit needs and to provide necessary credit not obtained on a long-term basis.



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